CLAIMS

What is claimed is:

1. A method of forming a protective cushion to slow down evaporation and prevent clogging in an inactive ink-jet printhead, the inactive ink-jet printhead comprised of at least one ink firing chamber having an opening to at least one nozzle, the method comprising the steps of:

a) heating ink-jet ink in the at least one ink firing chamber, the ink separating into an organic surfactant phase and an ink colorant phase; and

b) forming the protective cushion at the opening to the at least one nozzle by allowing the organic surfactant phase to settle as a layer on the opening of the at least one nozzle in the at least one ink firing chamber.

2. The method of claim 1, wherein the heating of the ink-jet ink is by sending voltage through at least one resistor in the at least one ink firing chamber.

3. The method of claim 1, wherein the heating of the ink-jet ink is to a temperature from 40° to 95° C.

4. The method of claim 1, wherein the heating of the ink-jet ink is to a temperature from 60° to 80°C.

5. The method of claim 1, wherein ink colorant in the ink colorant phase is selected from the group consisting of dye and pigment.

6. The method of claim 1, wherein the organic surfactant phase is depleted of the colorants in the ink colorant phase.

7. The method of claim 1 wherein the ink-jet ink comprises inorganic salts.

8. The method of claim 7, wherein the organic surfactant phase of the ink-jet ink is depleted of the inorganic salts.

9. The method of claim 1, wherein the protective layer is expelled out of the at least one nozzle when the ink-jet printhead restarts printing ink through the at least one nozzle.

10. The method of claim 1, wherein the organic surfactant phase comprises solvents selected from the group consisting of poly(ethylene oxide) derivatives and poly(propylene oxide) derivatives.

11. The method of claim 1, wherein the organic surfactant phase comprises low polarity oils selected from the group consisting of hydrocarbons, halocarbons and siloxanes.

12. The method of claim 1, wherein the organic surfactant phase comprises surfactants selected from the group consisting of hydrocarbon surfactants, halocarbon surfactants and siloxane surfactants.

13. The method of claim 1, wherein the organic surfactant phase comprises halogenated solvents.

14. The method of claim 1, wherein the organic surfactant phase comprises solvents derivatized from siloxane.

15. The method of claim 1, wherein the organic surfactant phase has a density above 1.1 g/cm^3.

16. The method of claim 1, wherein the ink colorant phase has a lower density than the organic phase.

17. A system to slow down evaporation and prevent clogging in an inactive ink-jet printhead by forming a protective cushion covering an opening of at least one ink-jet nozzle in at least one ink firing chamber , the at least one ink firing chamber comprising:

a) a heating system adapted to heat ink-jet ink in the at least one ink firing chamber, the ink separating into an organic surfactant phase and an ink colorant phase; and

b) a protective cushion-forming system operative to form the protective cushion from the organic surfactant phase settling as a layer on the opening of the at least one nozzle in the at least one ink firing chamber.

18. The system of claim 15, wherein the heating of the ink-jet ink is by sending voltage through at least one resistor in the at least one ink firing chamber.

19. The system of claim 15, wherein the heating of the ink-jet ink is to a temperature from 40° to 95° C.

20. The system of claim 15, wherein the heating of the ink-jet ink is to a temperature from 60° to 80°C.

21. The system of claim 15, wherein ink colorant in the ink colorant phase is selected from the group consisting of dye and pigment.

22. The system of claim 15, wherein the organic surfactant phase is depleted of the colorants in the ink colorant phase.

23. The system of claim 15, wherein the ink-jet ink comprises inorganic salts.

24. The system of claim 23, wherein the organic surfactant phase of the ink-jet ink is depleted of the inorganic salts.

25. The system of claim 15, wherein the protective layer is expelled out of the at least one nozzle when the ink-jet printhead restarts printing ink through the at least one nozzle.

26. The system of claim 15, wherein the organic surfactant phase comprises solvents selected from the group consisting of poly(ethylene oxide) derivatives and poly(propylene oxide) derivatives.

27. The system of claim 15, wherein the organic surfactant phase comprises low polarity oils selected from the group consisting of hydrocarbons, halocarbons and siloxanes.

28. The system of claim 15, wherein the organic surfactant phase comprises surfactants selected from the group consisting of hydrocarbon surfactants, halocarbon surfactants and siloxane surfactants.

29. The system of claim 15, wherein the organic surfactant phase comprises halogenated solvents.

30. The system of claim 15, wherein the organic surfactant phase comprises solvents derivatized from siloxane.

31. The system of claim 15, wherein in the organic surfactant phase has a density above 1.1 g/cm^3.

32. The system of claim 15, wherein the ink colorant phase has a lower density than the organic surfactant phase.